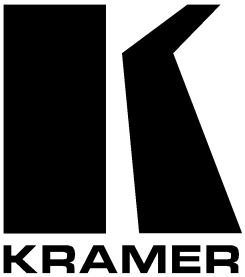
Kramer Electronics, Ltd.



USER MANUAL

Models:

TP-551, ***HDMI Line Transmitter***

TP-552, ***HDMI Line Receiver***

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer DigiTOOLS **TP-551** *HDMI Line Transmitter* and Kramer DigiTOOLS **TP-552** *HDMI Line Receiver* which are ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

The package includes the following:

- **TP-551** and/or **TP-552**
- Power adapter (12V DC Input)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from the Internet at this URL: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

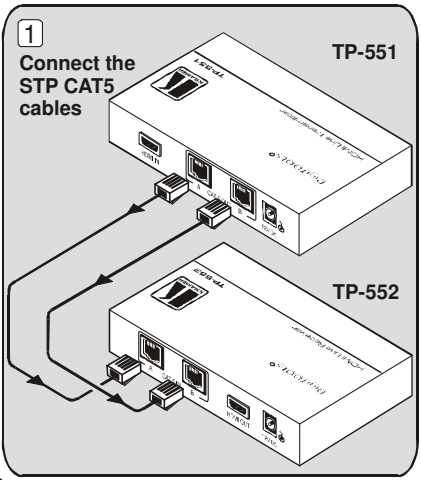
Step 1: Connect the STP CAT5 cable and the output

1

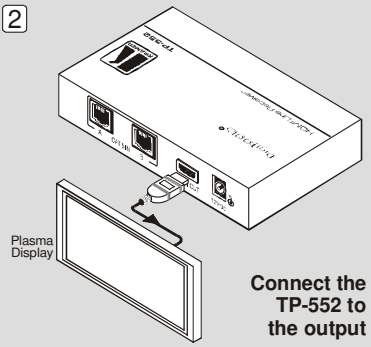
Connect the STP CAT5 cables

TP-551

TP-552



2

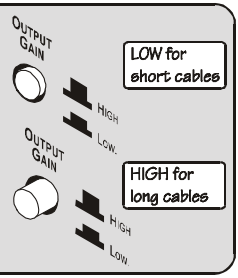


Connect the TP-552 to the output

Step 2: Connect the power

Step 3: Set the OUTPUT GAIN and connect the input

1

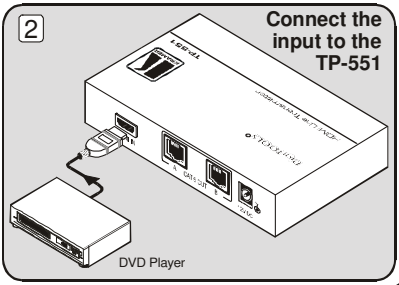


LOW for short cables

HIGH for long cables

On the TP-551, set the OUTPUT GAIN

2



Connect the input to the TP-551

Step 4: Select the EQ.

On the TP-552, select the EQ. according to the cable length

3 Overview

The Kramer **TP-551** and the **TP-552** constitute a high quality HDMI line transmitter / receiver system using two STP CAT5 cables. The transmission range between the HDMI source and the HDMI acceptor can be extended to up to 60m (200ft).

This transmitter / receiver pair:

- Supports up to 1.65Gbps bandwidth
- Automatically reads and stores the EDID block from the output display devices in non-volatile memory, so that it can then provide this EDID information to the HDMI source – even if the display device is not connected
- Includes a default EDID for fast and efficient connection

The **TP-551** *HDMI Line Transmitter* features:

- An HDMI input and a pair of RJ-45 CAT5 output connectors
- Three status LEDs (input, output and power)
- A high / low output gain selection button

The **TP-552** *HDMI Line Receiver* features:

- An HDMI output and a pair of RJ-45 CAT5 input connectors
- Three status LEDs (input, output and power)
- Four EQ. levels to enhance performance

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality. Note that Kramer Electronics Limited is an HDMI Adopter[2] and an HDCP Licensee[3].

In particular, HDMI:

- Provides a simple[4] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[5] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[6] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[7], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

HDMI has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p/60), as well as standard definition formats such as NTSC or PAL.

1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 See http://www.hdmi.org/about/adopters_founders.asp

3 See http://www.digital-cp.com/list/

4 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

5 HDMI technology has been designed to use standard copper cable construction at up to 15m

6 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

7 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

3.2 Defining EDID

The Extended Display Identification Data (EDID[1]) is a data-structure, provided by a display, to describe its capabilities to an HDMI source. The EDID enables the **TP-551** and **TP-552** to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection STP CAT5 24 AWG cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **TP-551/TP-552** away from moisture, excessive sunlight and dust

Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit[2].

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

1 Defined by a standard published by the Video Electronics Standards Association (VESA)

2 For example: model number AD2512C, part number 2535-000251

4 Your HDMI Line Transmitter / Receiver

This section describes the:

- **TP-551** *HDMI Line Transmitter*, see section 4.1
- **TP-552** *HDMI Line Receiver*, see section 4.2

4.1 Your TP-551 HDMI Line Transmitter

Figure 1, Figure 2, and Table 1 define the **TP-551**:

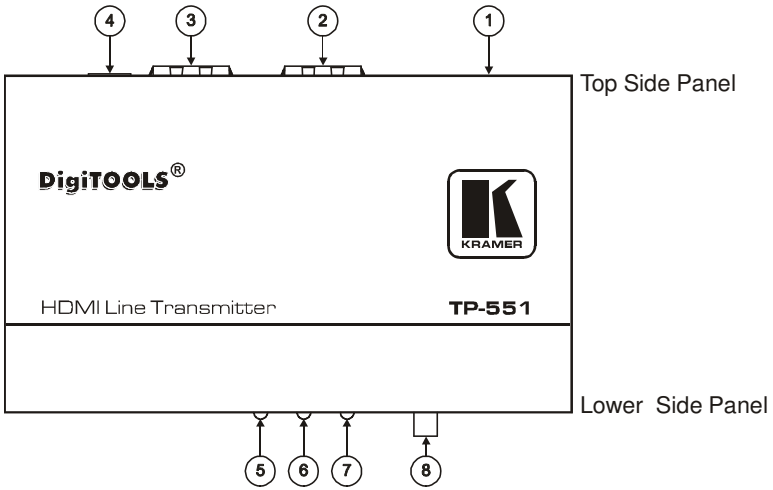


Figure 1: TP-551 HDMI Line Transmitter

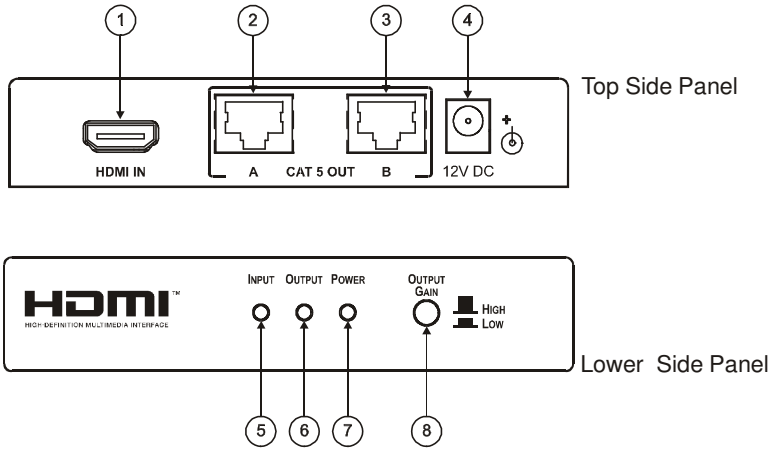


Figure 2: TP-551 (Top Side and Lower Side Panels)

Table 1: TP-551 HDMI Line Transmitter Features

#	Feature		Function
1	*HDMI IN* Connector		Connect to the HDMI source
2	*CAT 5 OUT* RJ-45 Connector	A	Connect to the CAT 5 IN A RJ-45 connector on the **TP-552**
3		B	Connect to the CAT 5 IN B RJ-45 connector on the **TP-552**
4	*12V DC*		+12V DC connector for powering the unit
5	*INPUT* LED		Lights when an input is connected
6	*OUTPUT* LED		Lights when an output is detected
7	*POWER* LED		Lights when receiving power
8	*OUTPUT GAIN (HIGH/LOW)* Pushbutton		Press to select low output gain (for short cable lengths) Release to select high output gain (for long cable lengths)

4.2 Your TP-552 HDMI Line Receiver

Figure 3, Figure 4, and Table 2 define the **TP-552**:

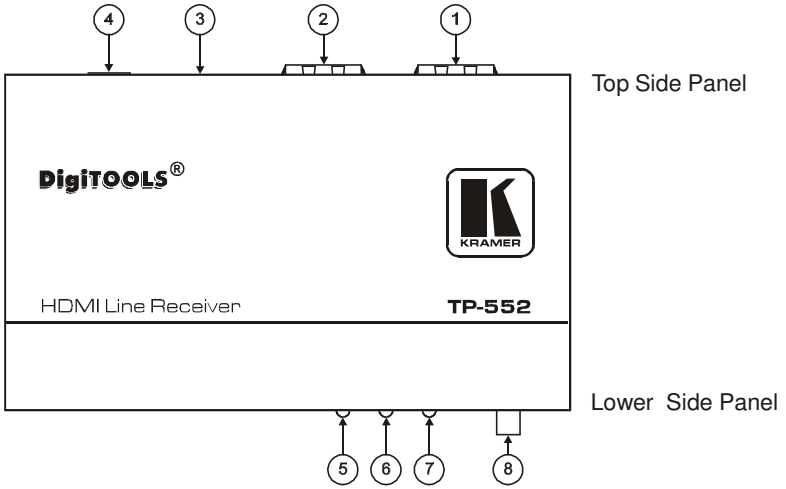


Figure 3: TP-552 HDMI Line Receiver

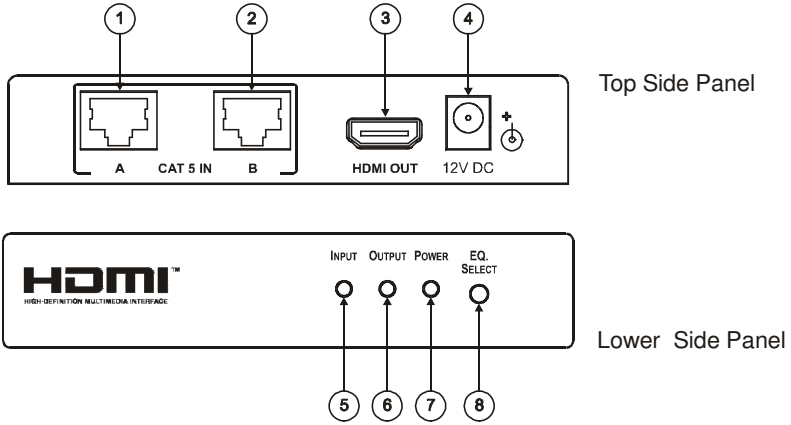


Figure 4: TP-552 (Top Side and Lower Side Panels)

Table 2: TP-552 HDMI Line Receiver Features

#	Feature		Function
1	*CAT 5 IN* RJ-45 Connector	A	Connect to the CAT 5 OUT A RJ-45 connector on the **TP-551**
2		B	Connect to the CAT 5 OUT B RJ-45 connector on the **TP-551**
3	*HDMI OUT* Connector		Connect to the HDMI acceptor
4	*12V DC*		+12V DC connector for powering the unit
5	*INPUT* LED		Lights when an input is detected
6	*OUTPUT* LED		Lights when an output is connected
7	*POWER* LED		Lights when receiving power
8	*EQ.* SELECT Pushbutton		Adjust the cable compensation equalization level (see section 5.1)

5 Connecting the TP-551 and TP-552

You can use the **TP-551** *HDMI Line Transmitter* with the **TP-552** *HDMI Line Receiver* to configure an HDMI transmitter/receiver system.

To connect the **TP-551** to the **TP-552**, as illustrated in the example in Figure 5, do the following:

1. Connect the CAT 5 OUT A and B RJ-45 connectors on the **TP-551** to the CAT 5 IN A and B RJ-45 connectors on the **TP-552** respectively, via two STP CAT5 cables (see section 5.2).
2. On the **TP-552**, connect the HDMI OUT connector to an HDMI acceptor (for example, a plasma display).
3. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity on both[1] the **TP-551** and the **TP-552** (not shown in Figure 5).
4. On the **TP-551**, set the OUTPUT GAIN[2] to LOW or HIGH according to the length of the CAT5 cables.
5. On the **TP-551**, connect an HDMI source (for example, a DVD player) to the HDMI IN connector.
6. On the **TP-552**, adjust the equalization level (see section 5.1).

5.1 Adjusting the EQ. Level

To adjust the EQ. according to the cable length:

1. Press the EQ. SELECT button for about 3 seconds to enter the setup mode. The INPUT or OUTPUT LEDs blink[3].
2. Keep the EQ. SELECT button pressed to cycle through the four equalization states, as defined in Table 3.

Table 3: Equalization Levels Setup

LED STATUS		Equalization Level Suitable for:
INPUT LED	OUTPUT LED	
Blinking	Off	Short cable length
Blinking	On	Medium cable length
Off	Blinking	Long cable length
On	Blinking	Extra long cable length

1 The TP-551/TP-552 does not include the Kramer power connect feature

2 Set to LOW for short cables and to HIGH for long cables

3 According to their current setup

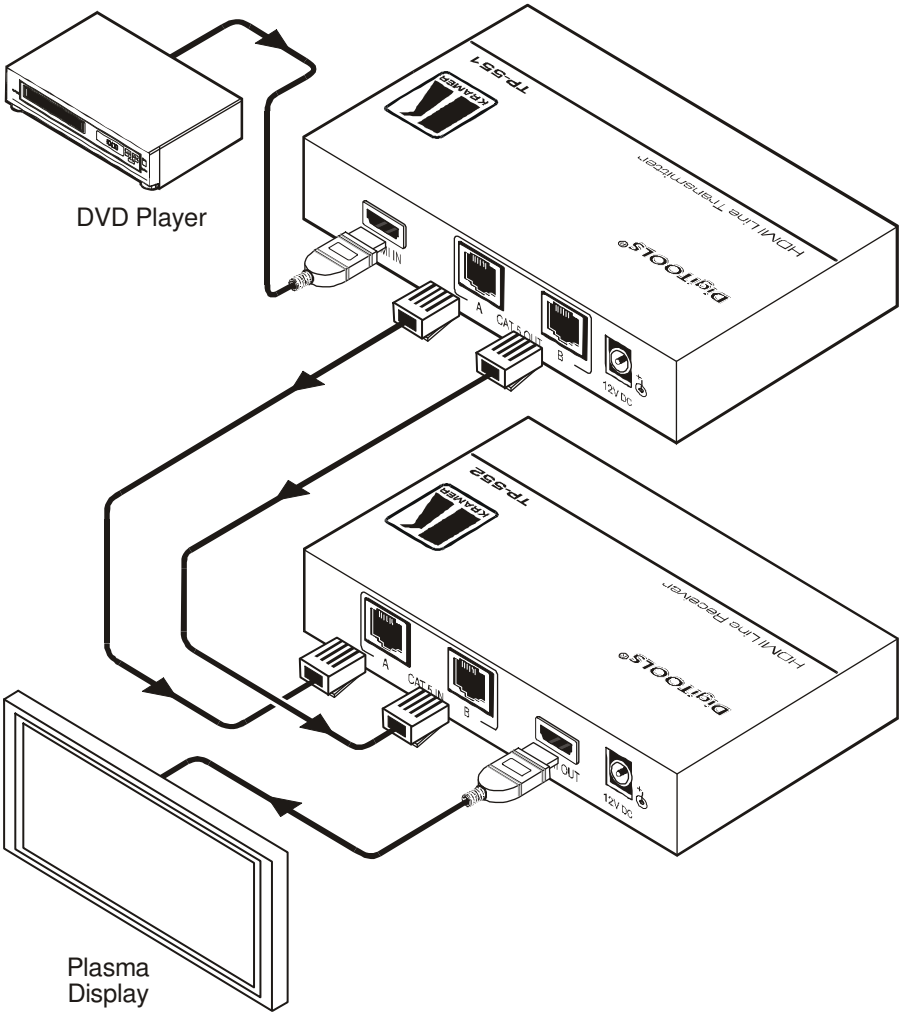


Figure 5: Connecting the TP-551 / TP-552 HDMI Line Transmitter/Receiver

5.2 Wiring the CAT5 LINE IN / LINE OUT RJ-45 Connectors

Table 4 and Figure 6 define the STP CAT5 PINOUT[1], using a straight pin-to-pin cable with RJ-45 connectors:

Figure 6: CAT5 PINOUT

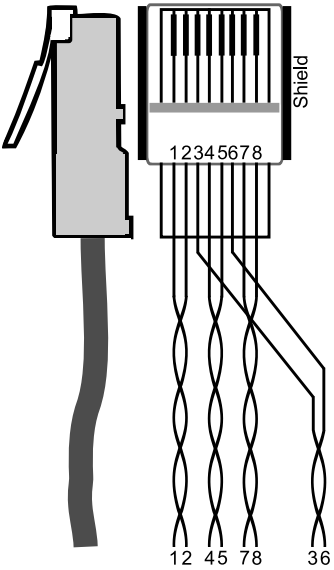


Table 4: CAT5 PINOUT

EIA /TIA 568A	
PIN	**Wire Color**
1	Green / White
2	Green
3	Orange / White
4	Blue
5	Blue / White
6	Orange
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	3 and 6
Pair 3	1 and 2
Pair 4	7 and 8

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

1 CAT6 or similar (heavier gauge) cabling can also be used

6 Technical Specifications

Table 5 includes the technical specifications[1].

Table 5: Technical Specifications of the TP-551 and TP-552

	TP-551	TP-552
INPUTS:	1 HDMI connector	2 CAT5 IN on RJ-45 connectors
OUTPUTS:	2 CAT5 OUT on RJ-45 connectors	1 HDMI connector
BANDWIDTH:	Supports up to 1.65Gbps bandwidth per graphic channel	
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI 1.2 and HDCP	
POWER SOURCE:	12V DC, 330mA	12V DC, 440mA
DIMENSIONS:	12.1cm x 7.18cm x 2.42cm (4.76" x 2.83" x 0.95"), W, D, H	
WEIGHT:	0.3 kg. (0.67 lbs.) approx.	
ACCESSORIES:	Power supply	

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000225 REV 2